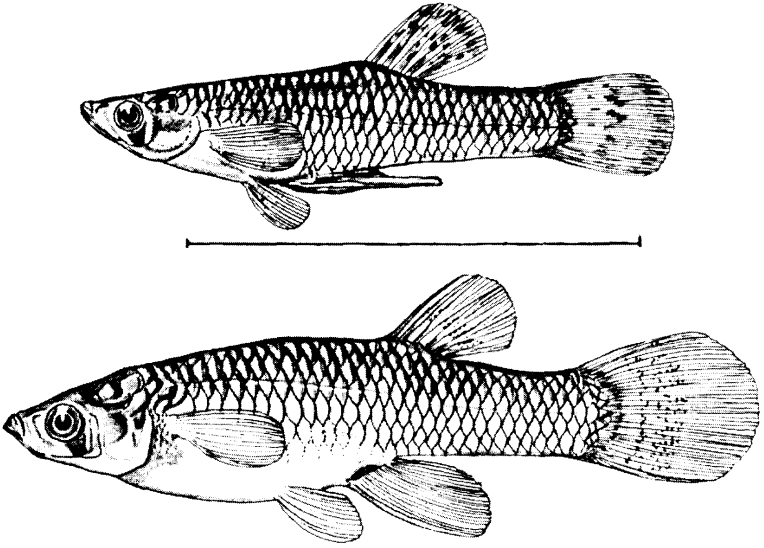
MOSQUITOFISH
GAMBUSIA AFFINIS

Gambusia = absence of, or nothing
affinis = related



DISTINGUISHING CHARACTERISTICS

Mosquitofish belong to the topminnow family. They are small and elongated, with rounded tail fins. The dorsal ho is located behind the anal fin. The body color is light olive, with each scale dark-edged. A very narrow, dark streak runs along the sides. The head is flat above and the mouth slants obliquely upwards. The male is easily recognized by its greatly elongated anal fin, which is modified into a reproductive organ.

DISTRIBUTION IN CALIFORNIA

The mosquitofish has been widely spread throughout the State since 1922, when it was first introduced to control mosquitoes.

GENERAL INFORMATION

This species, related to the common aquarium guppy, brings forth 10 to 30 live young. The male fertilizes the female internally with the modified anal fin.

IMPORTANCE

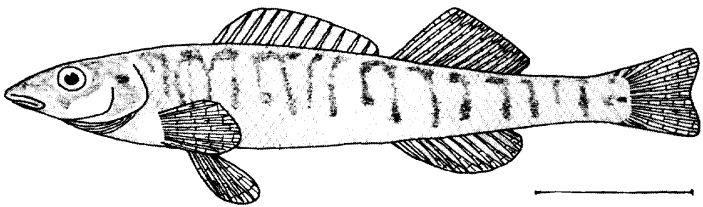
The mosquitofish is widely used throughout the State to control mosquito larvae. This is one of the main items in the diet of this fish. It is of minor importance as forage and bait.

RELATED SPECIES

The sailfin molly, *Mollienesia latipinna* (*Mollienesia* = Mollien, French Minister of Finance; *latipinna* = broad fin) has recently become established in canals and ditches tributary to the Salton Sea, in the vicinity of the Riverside-Imperial county line. It is a popular aquarium fish. The color is black. Its fins are quite large.

LOGPERCH
Percina caprodes

Percina = perch-like
caprodes = head bound together; i.e., refers to upper jaw bound to snout



DISTINGUISHING CHARACTERISTICS

The logperch is a rather small, slender fish belonging to the perch family. It has a divided dorsal fin, the first part of which is composed of spines, and the second of rays. The mouth is overhung by the snout. Along the midline of the belly there is a single line of enlarged scales, which is separated by a slight groove from the scales on either side. The color is yellowish-green, with about 15 dark cross bands on the sides.

DISTRIBUTION IN CALIFORNIA

It is present in several waters in Beale Air Force Base in Yuba County. It was introduced there inadvertently in 1953 by Federal personnel importing warmwater game fish to stock the lakes on the air base.

GENERAL INFORMATION

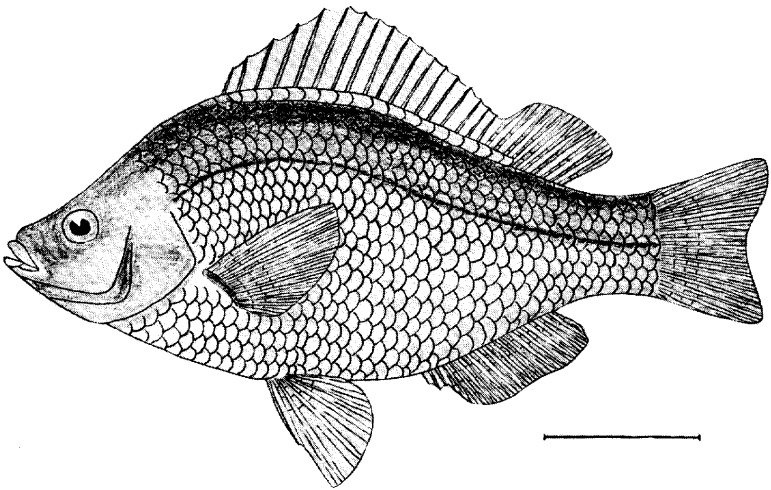
The logperch belongs to a group of fish commonly known as “darters.” They are sometimes referred to as the hummingbirds of the fishes. Their broad fins, pointed heads, and small size suit them admirably for the shallow, swift streams which they usually inhabit.

IMPORTANCE

Logperch are of no importance as forage because of their small size and ability to hide among rocks to escape predation.

TULE PERCH
Hysterocarpus traskii

Hysterocarpus = womb fruit
traskii = after Dr. J. B. Trask, who collected the first specimens.



DISTINGUISHING CHARACTERISTICS

The tule perch superficially resembles a sunfish. It has spines and rays in both dorsal and anal fins. The dorsal fin is quite long, with 15 or more spines, and a distinct row of scales along its base. The mouth is small. Tule perch do not grow large, individuals over eight inches long being rare. This species has two color phases: one is rather pale over the entire body, while the other has dark barred coloring on the back and sides.

DISTRIBUTION IN CALIFORNIA

It has been collected from various rivers in the Central Valley from the Pit to the San Joaquin; also from the Russian, Napa, Pajaro, and Salinas rivers, Alameda Creek, and Clear Lake.

GENERAL INFORMATION

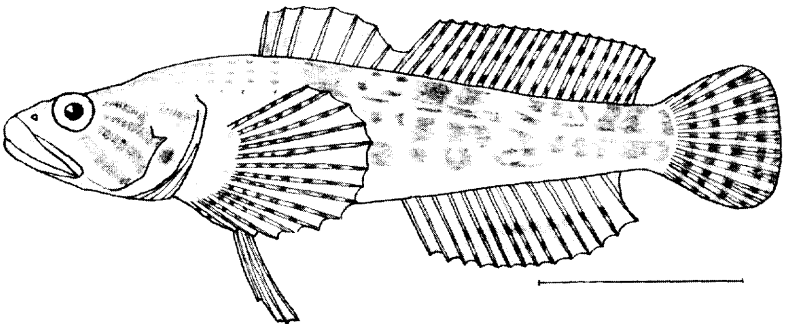
The tule perch is the only freshwater representative of the surfperch family, a group which brings forth live young. Females are fertilized internally, and the young are nourished and develop within the mother's body in sac-like compartments of the ovary. The young are born in May or June.

IMPORTANCE

It is of little economic importance. Populations are not widespread enough to be used extensively for forage by other species. A few fish are caught by anglers.

RIFFLE SCULPIN
Cottus gulosus

Cottus = old European name
gulosus = greedy



DISTINGUISHING CHARACTERISTICS

Representatives of the sculpin family are found in both fresh and salt water. Freshwater sculpins are small, bottom-dwelling fish with large flattened heads, thin tapering bodies, and large pectoral fins. The eyes are located high on the head. The gill cover usually has one or more conspicuous spines. The body may be naked or covered almost entirely or only partly with tubercles, prickles, or scales. The mouth is large.

DISTRIBUTION IN CALIFORNIA

The riffle sculpin is common in the cooler waters of the Sacramento-San Joaquin rivers and several coastal drainages, such as the Russian River.

GENERAL INFORMATION

Sculpins are like the little man no one ever sees. They are plentiful enough, but their habits are so deliberate and their camouflage so good that we rarely see them. Their favorite habitat is stream riffles, where the rapidly flowing water and crevices in the rocks add to their cloak of invisibility.

Another common name is miller's thumb. This alludes to their shape, which is said to resemble a miller's thumb caught between the stones of an old-fashioned grist mill.

Most freshwater sculpins are stream spawners. They deposit their eggs in clusters under the larger stones in flowing waters. However, one species is known to spawn in Eagle Lake.

IMPORTANCE

Sculpins are of some importance as bait and as predators on young salmonids. Their reputation for egg-eating is deserved, but evidence shows that nearly all of the eggs they take are those swept out of the nest before the parent trout or salmon can bury them. These eggs would perish anyhow. They are known to take young trout and salmon just after they emerge from the gravel and before they swim well. Serious damage can result if a large sculpin population exists.

Food habit studies of trout, white catfish, and largemouth bass have shown sculpins to be important in their diets.

RELATED SPECIES

Six other species of sculpins inhabit the fresh waters of California. They all look very much alike.

The rough sculpin, *Cottus asperrimus* (*asperrimus* = most rough), is found primarily in the Pit River below Fall River Mills.

The Pit sculpin, *Cottus pitensis* (*pitensis* = of the Pit River) is found in the Pit River, primarily above Fall River Mills.

The Klamath sculpin, *Cottus klamathensis* (*klamathensis* = of the Klamath River), is found both in the Pit and Klamath drainages.

The prickly sculpin, *Cottus asper* (*asper* = rough), is found in coastal streams.

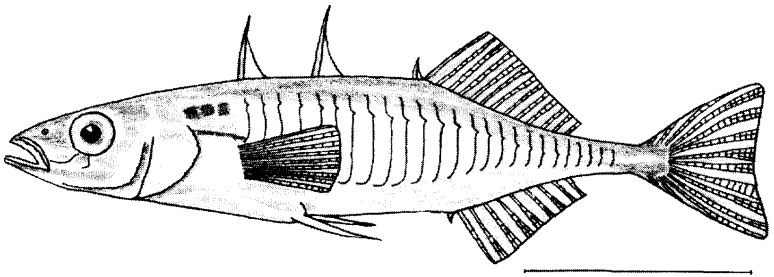
The Aleutian sculpin, *Cottus aleuticus* (*aleuticus* = of the Aleutians) is also common in coastal streams

The Piute sculpin, *Cottus beldingii* (*beldingii* = for Lyman Belding, who collected early specimens), is found in Great Basin streams, such as the Truckee and Walker rivers.

At least two primarily saltwater forms, the sharpnose sculpin, *Clinocottus acuticeps* (*Clinocottus* = slanting cottus; *acuticeps* = sharp head), and the staghorn sculpin, *Leptocottus armatus* (*Leptocottus* = slender cottus; *armatus* = armed), extend their range regularly into brackish and fresh water.

THREESPINE STICKLEBACK
Gasterosteus aculeatus

Gasterosteus = belly bone
aculeatus = spined



DISTINGUISHING CHARACTERISTICS

Sticklebacks are small, rather inconspicuous fish with compressed, spindle-shaped bodies, covered with a few bony plates or shields in place of scales. Three sharp erectile spines precede the soft dorsal fin. The mouth is small, with a projecting lower jaw. The ventral fins have sharp erectile spines. Their color is greenish or olive above, grading to silvery on the lower sides and belly. At spawning time, the males have a scarlet throat and belly, blue eyes, and greenish fins. The females at this time have a pinkish throat and belly.

DISTRIBUTION IN CALIFORNIA

The threespine stickleback is found throughout the northern hemisphere, south to lower California and north Africa. Three subspecies are recognized in California:

Northern threespine stickleback, *Gasterosteus aculeatus aculeatus*, is fully armored, with plates along the sides. It is found in ocean and brackish waters.

West Coast threespine stickleback, *Gasterosteus aculeatus microcephalus* (*microcephalus* = small head), is partially armored, with 5 or 6 to 25 or 26 plates. It is widespread in fresh waters in California.

Unarmored threespine stickleback, *Gasterosteus aculeatus williamsoni*, (*williamsoni* for Lieut. R. S. Williamson, who first collected this subspecies), is usually unarmored, or may have 2 or 3 anterior plates. It is found in several coastal streams in southern California and has been introduced into the Mojave River.

GENERAL INFORMATION

The food consists of small aquatic organisms, primarily insects and crustaceans. Algae are also eaten. Breeding occurs in the late spring and

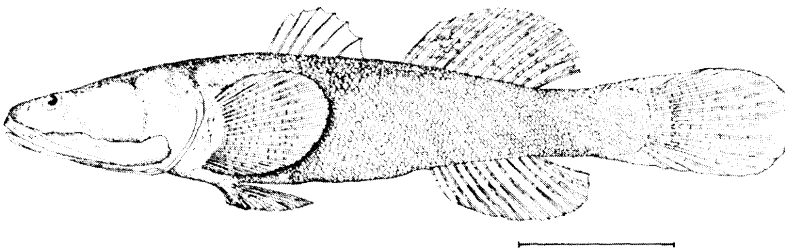
early summer. The male builds an elaborate nest of grass and sticks stuck together by a glue-like secretion. The nests may be located on the bottom or concealed in holes, cans, bottles, etc. Several females may deposit eggs in one nest. The male guards the nest until the eggs hatch and the young are on their own.

IMPORTANCE

Sticklebacks occasionally become pests in hatcheries by devouring large numbers of trout fry. They are sometimes eaten by game fish.

LONGJAW MUDSUCKER
Gillichthys mirabilis

Gillichthys = after Theodore Gill
mirabilis = wonderful



DISTINGUISHING CHARACTERISTICS

The pelvic fins are united, forming a disc. There are two dorsal fins. The tail fin is rounded. The mouth is huge, with the maxillary extending back to beyond the gill opening in adults. The color is brownish or olive above, speckled, mottled, or barred with darker shades, becoming lighter below. This species seldom exceeds 8 inches in ocean waters and 5 ½ inches in the Salton Sea.

DISTRIBUTION IN CALIFORNIA

The longjaw mudsucker is a marine species, ranging from Tomales Bay to Baja California. It has been established in the Salton Sea through introduction.

GENERAL INFORMATION

Spawning in the Salton Sea occurs from December through May. Food of the young consists mainly of plankton, while the adults feed mainly on insects and pile worms. Few fish over two years of age are found.

IMPORTANCE

The longjaw mudsucker is an important bait fish, used extensively by inland anglers. In recent years it has been imported from Baja California, since the demand has exceeded the supply in southern California.

RELATED SPECIES

The tidewater goby, *Eucyclogobius newberryi* (*Eucyclogobius* = well circle, i.e., pertaining to the cycloid scales; *newberryi* = for Dr. John Strong Newberry of Columbia College and the U. S. Geological Survey), is found in small coastal streams. This species grows to about two inches in length. The maxillaries do not extend backward, as in *Gillichthys.*

SUGGESTED READING

The Book of Fishes. Edited by John Oliver LaGorce. National Geographic Society. 1952. 340 p.

The Life Story of the Fish. By Brian Curtis. Harcourt, Brace and Co., New York. 1949. 284 p.

The Ways of Fishes. By Leonard P. Schultz. D. Van Nostrand Co., Inc., New York. 1948. 264 p.

Fishes. A guide to familiar American species. By Herbert S. Zim and Hurst H. Shoemaker. Simon and Schuster, New York. 1956. 160 p.

Fishes of the Great Lakes Region. Carl L. Hubbs and Karl F. Lagler. Cranbrook Inst. Sci., Bull. 26. 1958. 227 p.

Fishes and Fisheries of Nevada. By Ira La Rivers. Nevada Fish and Game Commission. 1962. 782 p.

Fishes of Utah. By William F. Sigler and Robert Rush Miller. Utah State Department of Fish and Game. 1960. 203 p.

Freshwater Fishery Biology. By Karl F. Lagler. Win. C. Brown Co., Dubuque, Iowa. *1952.* 360 p.

Common Ocean Fishes of the California Coast. By Phil Al. Roedel. California Department of Fish and Game. Fish Bull. 91. 1953. 184 p.

The Ecology of the Salson Sea, California, in Relation to the Sport Fishery. Edited by Boyd W. Walker. California Department of Fish and Game. Fish Bull. 113. 1961. 204 p.

The Fishes of the Sacramento-San Joacjuin Basin, With a Study of Their Distribution and Variation. By Cloudsley Rutter. U. S. Bureau of Fisheries, Bull., vol. 27, p. 103-152.

Flow to Know the Freshwater Fishes. By Samuel Eddy. Win. C. Brown Co., Dubuque, Iowa. 1957. 253 p.

Bait Fishes of the Lower Colorado River from Lake head, Nevada, to Yun;a, Arizona, With a Key for their Identification. By Robert Rush Miller, California Fish and Game, 1952, vol. 38, no. 1, p. 7-42.

Keys to the Freshwater and Anadronious Fishes of California. By J. Bruce Kimsey and Leonard 0. Fisk. California Fish and Game, 1960, vol. 46, no. 4, p. 453-479.

ACKNOWLEDGMENTS

A good deal of the information in this booklet has come from various publications and notes. Part of the material is from personal observations.

The illustrations on pages 13, 15, 20, 22, 24, 28, 39, 40, 41, 44, and 53 were prepared by William L. Brudon of the University of Michigan. Dr. Ira La Rivers of the University of Nevada made available the drawings by Silvio Santina which appear on pages 17, 26, 35, and 37. Paul Johnson designed the cover illustration.

78803 800 **5-69 20M** *printed in* CALIFORNIA OFFICE OF STATE PRINTING